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The structure of post-traumatic stress disorder symptoms in three female trauma samples: A comparison of interview and self-report measures

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Abstract

Empirical research increasingly suggests that post-traumatic stress disorder (PTSD) is comprised of four factors: re-experiencing, avoidance, numbing, and hyperarousal. Nonetheless, there remains some inconsistency in the findings of factor analyses that form the bulk of this empirical literature. One source of such inconsistency may be assessment measure idiosyncrasies. To examine this issue, we conducted confirmatory factor analyses of interview and self-report data across three trauma samples. Analyses of the interview data indicated a good fit for a four-factor model across all samples; analyses of the self-report data indicated an adequate fit in two of three samples. Overall, findings suggest that measure idiosyncrasies may account for some of the inconsistency in previous factor analyses of PTSD symptoms.

Keywords: Factor structure; Measurement; Post-traumatic stress disorder; Psychological assessment; Test validity; Trauma

Both the revised third edition and the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R, DSM-IV; American Psychiatric and Association, 1987, 1994) classify post-traumatic stress disorder (PTSD) as an anxiety disorder that develops in response to a perceived traumatic event. The diagnosis of PTSD is further characterized by three distinct symptom clusters: (1) re-experiencing of the traumatic event through such phenomena as dreams, flashbacks, and intrusive, distressing thoughts; (2) avoidance and numbing, characterized by such phenomena as avoidance of trauma reminders and numbing of emotions; and (3) hyperarousal, characterized by such phenomena as difficulties sleeping and concentrating, irritability, and hypervigilance. These symptom clusters may have different mechanisms (Foa, Zinbarg, & Rothbaum, 1992), and may bear different functional relationships with interpersonal functioning, with physical health, and with symptoms often found comorbid with post-traumatic stress symptoms (Kimerling, Clum, & Wolfe, 2000; Ruscio, Weathers, King, & King, 2002; Stewart, Conrod, Pihl, & Dongier, 1999; Stewart, Pihl, Conrod, & Dongier, 1998). Thus, a clear understanding of the nature of PTSD symptom clusters has the potential to inform both knowledge of how

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various PTSD symptoms develop and how these symptoms relate to co-occurring difficulties.

Nonetheless, since the advent of DSM-III-R, the adequacy of these clusters for describing PTSD has been questioned. Much of this questioning derives from the findings of factor analyses that have consistently reported between two and four factors, and which have not supported the three-factor, hierarchical structure of PTSD symptoms outlined in the DSM. Initial factor analyses of PTSD symptoms were exploratory in nature; direct testing of hypotheses regarding the nature of these symptoms is not possible with such analyses. To date, exploratory factor analyses of DSM-III-R/DSM-IV PTSD symptoms have been conducted with numerous populations, including survivors of fires, motor vehicle accidents and assaults, United Nations peacekeepers, refugees, and military veterans (Fawzi et al., 1997; Foa, Riggs, & Gershuny, 1995; Keane, 1993; Maes et al., 1998a, 1998b; Sack, Seeley, & Clarke, 1997; Shelby, Golden-Kreutz, & Andersen, 2005; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999; Smith, Perrin, Dyregrov, & Yule, 2003; Stewart et al., 1999; Taylor, Kuch, Koch, Crockett, & Passey, 1998). Two-, three-, four-, and five-factor solutions have been reported, with no solution clearly paralleling the symptom clusters suggested by the most recent versions of the DSM.

Along with these exploratory factor analyses, numerous confirmatory factor analyses (CFAs) of DSM-III-R/DSM-IV PTSD symptoms have been conducted (Andrews, Joseph, Shevlin, & Troop, 2006; Anthony, Lonigan, & Hecht, 1999; Anthony et al., 2005; Asmundson et al., 2000; Asmundson, Wright, McCreary, & Pedlar, 2003; Baschnagel, O'Connor, Colder, & Hawk, 2005; Buckley, Blanchard, & Hickling, 1998; Cordova, Studts, Hann, Jacobsen, & Andrykowski, 2000; DuHamel et al., 2004; King, Leskin, King, & Weathers, 1998; Maes et al., 1998a, 1998b; Marshall, 2004; McWilliams, Cox, & Asmundson, 2005; Palmieri & Fitzgerald, 2005; Palmieri, Marshall, & Schell, 2007; Palmieri, Weathers, Difede, & King, 2007; Sack et al., 1997; Simms, Watson, & Doebbeling, 2002; Stewart et al., 2004). CFAs have several advantages over exploratory factor analyses in elucidating the structure of PTSD symptoms. First, such analyses permit direct testing of hypothesized models of symptom structure. Second, these analyses permit testing of several competing models to determine which model or models of those examined provide the best fit to data. As with the exploratory factor analyses, CFAs have been performed with several different trauma samples.

Using a sample of breast cancer survivors, Cordova et al. (2000) compared a one-factor model to a model suggested by the DSM-IV. The DSM-IV-based model demonstrated superior fit. Buckley et al. (1998) and Asmundson et al. (2003) examined the fit of a hierarchical model with two lower-order factors, intrusion/ avoidance and hyperarousal/numbing, loading onto a higher-order factor. This model was derived from an earlier exploratory factor analysis with motor vehicle accident survivors and United Nations peacekeepers (Taylor et al., 1998). Results again supported this two-factor, hierarchical model in samples of motor vehicle accident survivors and United Nations peacekeepers, respectively. Maes et al. (1998a, 1998b) also found a two-factor model, labeled depression/avoidance and anxiety/arousal, to provide the best fit in their sample of fire and motor vehicle accident survivors. In a quite comprehensive effort, Anthony et al. (1999) compared 10 symptom models in a large group of children exposed to a hurricane ($N = 5664$), including a model based on the DSM and a model based on Taylor et al. (1998). A three-factor solution, intrusion/active avoidance, numbing/passive avoidance, and arousal, that loaded on a higher order factor provided the best fit. This model was later supported in an additional group of hurricane-exposed children (Anthony et al., 2005)

Additional comprehensive efforts have each found a four-factor model to provide superior fit. King et al. (1998) examined the fit of four symptom models in a group of military veterans. A four-factor, intercorrelated solution, with factors described as re-experiencing, effortful avoidance, emotional numbing, and hyperarousal, provided the best fit. This model has subsequently been supported in several other trauma groups (Asmundson et al., 2003; DuHamel et al., 2004; Marshall, 2004; Palmieri & Fitzgerald, 2005; Palmieri, Marshall, et al., 2007; Palmieri, Weathers, et al., 2007; Stewart et al., 2004). Simms et al. (2002) examined the fit of six symptom models in a large group of military personnel ($N = 3695$). Models based on the DSM-IV and those of King et al. (1998) and Anthony et al. (1999) were included. A four-factor, intercorrelated model, with factors described as intrusions, avoidance, dysphoria, and hyperarousal, provided the best overall fit. More recent studies have also supported this solution (Baschnagel et al., 2005; Palmieri, Weathers, et al., 2007). Additionally, Asmundson et al. (2000) compared the fit of five symptom models, including Taylor et al.'s two-factor model (1998), two four-factor models examined by King et al. (1998), and two three-factor models based on DSM-IV criteria, in a group of primary care patients. A hierarchical model with four lower-order factors, re-experiencing, avoidance, numbing, and hyperarousal, loading onto a higher-order factor provided the best overall fit. While this model has not received as much

attention in CFA studies as the King et al. (1998) avoidance/ numbing model and the Simms et al. (2002) dysphoria model, it has nonetheless received some additional support (see, e.g., Andrews et al., 2006).

While the findings of such CFAs are not uniform, the bulk of the data suggest a four-factor structure of PTSD symptoms wherein avoidance and numbing symptoms split into two factors. Moreover, there are additional lines of evidence suggesting that a four-factor structure of this type best captures the nature of PTSD. In a recent review of this literature, Asmundson, Stapleton, and Taylor (2004) identified four lines of evidence that support the differentiation of avoidance and numbing symptoms. While results of factor analyses form the bulk of this evidence, differential effects of treatment modalities, differential treatment outcomes, and differential correlations with related constructs also suggest that avoidance and numbing are distinct in their contributions to the PTSD construct. For example, the review found that depression bore a stronger relationship to numbing than to avoidance and that numbing, but not avoidance, predicted response to cognitive-behavioral therapy.

Nonetheless, as evidence accrues in support of a four-factor structure of PTSD, reasons behind the variability of factor analytic findings remain underexamined. One important source of variability may be the use of self-report versus interview measures of symptoms. To date, only one CFA study has examined the factor structure of PTSD in a single sample using both self-report and interview measures (Palmieri, Weathers, et al., 2007). In this study, Palmieri, Weathers, et al. (2007) examined the fit of five models in a group of disaster workers. The vast majority of participants were male, with 8.0–9.5% meeting criteria for PTSD. The best-fitting model differed for each assessment strategy, with the avoidance/numbing model best fitting the interview data and the dysphoria model best fitting the self-report data. These findings support the idea that the outcomes of previous CFAs may be substantially influenced by the idiosyncrasies of a particular measure. Nonetheless, the possibility that unique features of specific assessment methods may be guiding the findings of factor analyses remains limited to this single study. Thus, the primary goal of the current study was to build upon extant data in two ways: (1) by examining the factor structure of PTSD using both interview and self-report measures of symptoms in each of three trauma samples; and (2) by conducting this examination in samples that substantially differed from Palmieri, Weathers, et al. (2007) in terms of gender composition, trauma type, and PTSD status.

To achieve this goal, we conducted CFAs of PTSD symptoms in three female trauma groups: (1) women who had experienced a first-degree physical assault or completed rape within the past month; (2) women who had made contact with a domestic violence program, over half of whom were currently living in a shelter; and (3) women seeking treatment for rape-related PTSD, with an average time since rape of nearly nine years. For each sample, two factor analyses were performed—one using an interview measure of symptoms and one using a self-report measure of symptoms. This analytic strategy enabled us not only to examine differences in factor structure due to method idiosyncrasies, but also to examine whether factor structure differed between samples. Indeed, although population differences may also be important sources of variance in factor analysis findings, only Simms et al. (2002) and Anthony et al. (2005) have specifically examined factor structure between populations that differed on variables such as trauma type, PTSD status, and time elapsed since trauma. In each analysis, we examined the fit of Asmundson et al.'s (2000) hierarchical, four-factor structure. We examined this structure for two reasons. First, as previously discussed, there is increasing evidence that a four-factor structure may best describe the construct of PTSD. Second, this model is congruent with the current conceptualization of PTSD in DSM-IV wherein all symptoms are related to a higher order construct (i.e., the PTSD diagnosis).

1. Method

1.1. Participants

All participants were recruited as part of larger studies examining cognitive processes in PTSD (see author note for information on supporting grants). All studies were approved by the University of Missouri, St. Louis Institutional Review Board; informed consent was obtained from all participants after explaining study procedures. Participants for whom data were available on at least one measure relevant to this study were included in the analyses (100% of the total recent assault sample, 96.9% of the total treatment-seeking sample, and 98.8% of the total domestic violence sample; see below for sample descriptions).

1.2. Recent assault sample

This sample consisted of 222 women who had recently experienced an assault. Approximately 65% (n = 144) had experienced a completed rape within the

last month, and approximately 35% ($n = 78$) had experienced a first-degree physical assault within the last month. They were recruited from local police departments, victim assistance agencies, and hospitals. Participants initiated contact with the investigators by responding to recruitment postcards sent primarily by police throughout the project period, or mailed or handed out by other programs. Women ranged in age from 18 to 57 years ($M = 31.12$, S.D. = 8.74). Most self-identified as African-American/ Black ($n = 147$; 66.2%) or Caucasian/ White ($n = 55$; 24.8%), and had incomes of $10,000 or less ($n = 140$; 63.1%).

1.3. Treatment-seeking sample

This sample consisted of 281 women seeking treatment for rape-related PTSD. The average time since rape was 8.82 years (S.D. = 9.12; Range = 3.0 months to 47.0 years). They were recruited through newspaper articles and announcements, flyers posted in the community, and referrals from community agencies. Women ranged in age from 18 to 72 years ($M = 32.65$, S.D. = 10.44). Most self-identified as African-American/ Black ($n = 74$; 26.3%) or Caucasian/White ($n = 184$; 65.5%). The majority ($n = 149$; 53.0%) did not have income data available. For the subset that did, over half had incomes of $20,000 or less ($n = 76$; 57.6%).

1.4. Domestic violence sample

This sample consisted of 422 women who contacted a domestic violence program. Over half (57%; $n = 239$) were living in a shelter at the time of assessment. Women ranged in age from 18 to 62 years ($M = 34.47$, S.D. = 8.14). Most self-identified as African-American/ Black ($n = 279$; 66.1%) or Caucasian/ White ($n = 116$; 27.5%), and had incomes of $20,000 or less ($n = 214$; 50.7%).

1.5. Measures

1.5.1. Clinician administered PTSD scale (CAPS; Blake et al., 1995)

Each sample was administered the CAPS. The CAPS is an interview designed to assess the frequency and intensity of PTSD symptoms and associated features. Both frequency and intensity items are rated from 0 to 4, with higher scores indicating greater frequency or intensity. In this study, scores on the frequency and intensity items for each symptom were summed to create severity indices for use in the analyses (Weathers, Keane, & Davidson, 2001); this scoring procedure is consistent with that used in other CFAs (e.g., Buckley et al., 1998; King et al., 1998). The CAPS has demonstrated reliability and validity with civilian trauma populations, including inter-rater reliability of symptom ratings and convergent validity with several self-report measures of post-traumatic stress symptoms (Weathers et al., 2001). The time frames for assessment of symptoms were "past week" for the recent assault sample, "past month" for the treatment-seeking sample, and "past month" for the domestic violence sample. The CAPS was administered by trained clinical interviewers with masters or doctoral degrees in clinical psychology.

1.5.2. Post-traumatic diagnostic scale (PDS; (Foa, Cashman, Jaycox, & Perry, 1997)

The domestic violence sample completed the PDS. The PDS is a 49-item self-report measure that assesses trauma history and all DSM-IV criteria for the diagnosis of PTSD. Consistent with DSM-IV, the measure assesses frequency of symptoms over the past month. Respondents rate the frequency of each symptom item on a scale from 0 to 3, with higher scores indicating greater frequency of symptoms. The PDS has demonstrated reliability and validity with a heterogeneous trauma group, including 2–3-week test–retest reliability of .83 for overall symptom frequency scores and concurrent validity with the Revised Impact of Events Scale (Foa et al., 1997).

1.5.3. PTSD symptom scale-self-report (PSS-SR; Foa, Riggs, Dancu, Rothbaum, 1993)

The recent assault and treatment-seeking samples completed the PSS-SR. The PSS-SR is a 17-item self-report measure that assesses frequency of DSM-III-R PTSD symptoms over the past 2 weeks. Respondents rate the frequency of PTSD symptoms on a scale from 0 to 3, with higher scores indicating greater frequency of symptoms. The PSS-SR has demonstrated reliability and validity with a heterogeneous trauma group, including 1-month test–retest reliability of .74 for overall symptom frequency scores and concurrent validity with the Impact of Events Scale (Foa et al., 1993).

2. Results

2.1. Descriptive statistics

PSS-SR scores ranged from 0 to 51 ($M = 28.01$, S.D. = 11.80) for the recent assault sample and 4 to 51 ($M = 29.18$, S.D. = 9.01) for the treatment-seeking sample. PDS scores ranged from 1 to 51 ($M = 28.95$, S.D. = 10.83) for the domestic violence sample. CAPS

scores ranged from 9 to 119 in the recent assault sample, 0 to 122 in the treatment-seeking sample, and 0 to 109 in the domestic violence sample. Mean CAPS scores indicated severe levels of symptoms in each sample: $M = 65.53$, S.D. = 25.07 for the recent assault sample; $M = 65.66$, S.D. = 26.00 for the treatment-seeking sample; and $M = 64.66$, S.D. = 24.95 for the domestic violence sample (Weathers et al., 2001). The percent of each sample meeting CAPS-based symptom criteria for PTSD was as follows: 69.3% ($n = 140$) for the recent assault sample, 78.9% ($n = 221$) for the treatment-seeking sample, and 75.4% ($n = 107$) for the domestic violence sample.

2.2. Data screening

Data were screened for missing values using a two-stage process. First, all cases for which both self-report and interview data were unavailable were removed from the data sets. Second, a visual scan of the remaining cases was conducted to evaluate randomness of missing data. All missing values appeared to be missing at random and were thus replaced with mean values.

Multivariate kurtosis was assessed with Mardia's normalized estimate. One case was deleted from the recent assault sample's self-report data and five cases were deleted from the domestic violence sample's self-report data because they were extreme multivariate outliers. Univariate skewness and kurtosis were examined for each item because non-normality can adversely affect structural equation modeling and CFAs. None of these indices were excessively out of range.

2.3. Data analysis overview

CFAs were conducted to assess the degree to which the data from each sample fit the four-factor, higher-order model of PTSD suggested by Asmundson et al. (2000). These analyses were performed using the program EQS (version 6.1; Bentler, 2004), and followed the procedures outlined by Byrne (1994). Raw data were used as input, along with a maximum likelihood estimation procedure. Because the purpose of these CFAs was to test the validity of a single model of PTSD across interviewer-assessed and self-report indices, no item cross-loadings or correlated residuals were allowed. With the exception of the CAPS data in the domestic violence sample, individual items were used as indicators; for the one exception, item parcels were developed by randomly creating three indicators, separately for the re-experiencing, numbing, and hyperarousal factors, and two indicators for the avoidance factor. This was done because the sample size did not permit an adequate case-to-indicator ratio (Kline, 1998).

Following recommendations by Hu and Bentler (1999), model fit was determined using several indices: (1) χ^2 (statistically non-significant values indicate a good fitting model); (2) χ^2/d.f. ratio (values < 2.0 indicate a good fitting model); (3) comparative fit index (CFI; values approximating .95 indicate a good fitting model); (4) root mean square error of approximation (RMSEA; values approximating .06 indicate a good fitting model); and (5) the standardized root mean square residual (SRMR; values approximating .08 indicate a good fitting model) (see also Browne & Cudeck, 1993; Marsh, Balla, & Bentler, 1999). All indices are displayed in Table 1. Emphasis is placed on the latter four fit indices because χ^2 statistics are inflated in larger samples (Hu & Bentler, 1999).

2.3.1. Recent assault sample

In this sample, CAPS data were available for 202 participants and PSS-SR data were available for 216 participants. As noted earlier, one case was deleted from the PSS-SR data because it was a multivariate outlier. The CFAs for both the CAPS and PSS-SR data showed that all items loaded onto their respective factors significantly ($p < .05$), all item and lower-order factor

Table 1
Confirmatory factor analysis fit indices by sample

	Fit indices					
	χ^2	d.f.	χ^2/d.f.	CFI	RMSEA	SRMR
Sample						
Recent assault						
CAPS	164.31**	116	1.42	.94	.05	.05
PSS-SR	206.99***	116	1.78	.94	.06	.05
Treatment-seeking						
CAPS	208.65***	116	1.80	.92	.05	.06
PSS-SR	240.89***	116	2.08	.86	.07	.07
Domestic violence						
CAPS	73.29*	41	1.79	.92	.08	.06
PDS	310.07***	116	2.67	.92	.06	.05

Note. For χ^2, non-significant values indicate a good fitting model. χ^2 / d.f. = ratio of χ^2 to degrees of freedom; values less than 2.0 indicate a good fitting model. CFI: comparative fit index; values approximating .95 indicate a good fitting model. RMSEA: root mean square error of approximation; values approximating .06 indicate a good fitting model. SRMR: standardized root mean square residual; values approximating .08 indicate a good fitting model. CAPS: clinician administered PTSD scale. PSS-SR: PTSD symptom scale- self-report. PDS: post-traumatic diagnostic scale.
*$p<.01$. **$p<.005$. ***$p<.001$.

residuals were significantly different from zero ($p < .05$), and all factor variances (both lower-and higher-order) were significant ($p < .05$). Fit indices for both the CAPS and the PSS-SR showed that the four-factor model fit the data well; four of five fit indices for each measure indicated good fit, with the χ^2 index being the exception for each measure (see Table 1). As previously noted, the χ^2 index may not be a strong indicator of fit because this index is inflated in larger samples (Hu & Bentler, 1999). Table 2 contains the standardized factor loadings for each of the items.

2.3.2. Treatment-seeking sample

In this sample, CAPS data were available for 280 participants and PSS-SR data were available for 219 participants. The CFAs for both the CAPS and PSS-SR data showed that all items loaded onto their respective factors significantly ($p < .05$), all item and lower-order factor residuals were significantly different from zero ($p < .05$), and all factor variances (both lower- and higher-order) were significant ($p < .05$). In this sample, however, the fit indices for the CAPS data showed superior fit to the four-factor model compared to the PSS-SR data (see Table 1). For the CAPS data, four of five indices indicated good fit, with the χ^2 index being the exception. For the PSS-SR data, only two of five indices (i.e., RMSEA, SRMR) indicated good fit. Table 2 contains the standardized factor loadings for each of the items.

2.3.3. Domestic violence sample

In this sample, CAPS data were available for 142 participants and PDS data were available for 418 participants. Only a sub-sample of all domestic violence participants was invited to complete the CAPS. As noted earlier, five cases were deleted from the PDS data because they were multivariate outliers. Also as noted earlier, item parcels were used in the CAPS CFA because the small sample size precluded the use of individual items as indicators. The CFAs for both the CAPS and PDS data showed that all items loaded onto their respective factors significantly ($p < .05$), all item and lower-order factor residuals were significantly different from zero ($p < .05$), and all factor variances (both lower- and higher-order) were significant ($p < .05$). As in the treatment-seeking sample, the fit indices for the CAPS showed superior fit to the four-factor model compared to the PDS data (see Table 1). For the CAPS data, four of five indices indicated good fit, with the χ^2 index being the exception. For the PDS

Table 2
Standardized factor loadings for interviewer-assessed and self-reported post-traumatic stress disorder symptoms

DSM-IV symptom[a]	Standardized factor loadings					
	Interviewer-assessed			Self-report		
	Recent assault	Treatment-seeking	Domestic violence[b]	Recent assault	Treatment-seeking	Domestic violence
B1. Intrusive recollections[R]	.57	.48	.68	.65	.64	.64
B2. Dreams[R]	.69	.69	.59[1]	.63	.64	.62
B3. Flashbacks[R]	.40	.43		.67	.62	.73
B4. Psychological distress[R]	.47	.69	.74[2]	.74	.61	.74
B5. Physiological distress[R]	.69	.57		.75	.60	.74
C1. Avoidance of thoughts[A]	.37	.69	.51	.53	.63	.59
C2. Avoidance of activities[A]	.59	.59	.61	.64	.61	.63
C3. Memory loss[N]	.18	.16	.33	.37	.29	.37
C4. Decreased interest[N]	.63	.64	.68[3]	.72	.69	.71
C5. Detachment[N]	.70	.70		.75	.70	.72
C6. Restricted emotion[N]	.76	.66	.73[4]	.64	.62	.54
C7. Shortened future[N]	.51	.56		.58	.55	.67
D1. Sleeping difficulties[H]	.53	.63	.65	.65	.50	.57
D2. Irritability/ anger[H]	.47	.44	.59[5]	.60	.56	.48
D3. Concentration difficulties[H]	.57	.56		.82	.45	.64
D4. Hypervigilance[H]	.48	.61	.64 [6]	.65	.57	.75
D5. Startle[H]	.61	.58		.69	.54	.77

Note. Symptoms were assessed using the clinician administered PTSD scale (interview measure) and either the PTSD symptom scale-self-report (self-report measure for the recent assault and treatment-seeking samples) or the post-traumatic diagnostic scale (self-report measure for the domestic violence sample). [a]Superscripts identify indicators of each factor (R: re-experiencing, A: avoidance, N: numbing, H: hyperarousal). [b]Superscripts identify DSM-IV symptoms used to construct item parcels (1 = B2 and B3, 2 = B4 and B5, 3 = C4 and C5, 4 = C6 and C7, 5 = D2 and D3, 6 = D4 and D5.

data, three of five indices (i.e., CFI, RMSEA, SRMR) indicated good fit. Table 2 contains the standardized factor loadings for each of the items.

3. Discussion

We examined whether method idiosyncrasies may account for some of the inconsistency in the factor structure of PTSD symptoms by conducting CFAs across interview and self-report measures of symptoms. Results were remarkably consistent across three trauma groups. For the interview measure of symptoms, the examined four-factor structure fit well, with four of five indices indicating good fit in each of the samples. The one exception was the χ^2 index, which tends to be inflated in larger samples and thus more likely to indicate poorer fit (Hu & Bentler, 1999). For the self-report measures of symptoms, model fit was adequate in two of the three samples. Specifically, four of five indices suggested good fit for the PSS-SR in the recent assault sample, three of five indices suggested good fit for the PDS in the domestic violence sample, and two of five indices suggested good fit for the PSS-SR in the treatment-seeking sample. Overall, these findings suggest that method idiosyncrasies may account for some of the inconsistency in previous factor analytic findings.

The interview data fit the theoretically supported and empirically supported four-factor model more consistently than self-report data. Moreover, the interview data demonstrated a good fit across three samples, while the self-report data demonstrated fit variation across samples. One reason for this difference may be that the CAPS more explicitly links numbing and hyperarousal symptoms to the experience of a traumatic event. Thus, high scores on interviewer-assessed numbing and hyperarousal symptoms may be more assuredly linked to the experience of a trauma and thus be considered symptoms of PTSD; high scores on self-reported measures of numbing and hyperarousal may indicate symptoms of PTSD, symptoms of depression, or simply a tendency to startle easily. Consequently, linking numbing and hyperarousal symptom ratings more explicitly to the experience of trauma may help increase the construct validity of self-report measures.

Despite the variance in model fit between interview and self-report indices of symptoms, there is one notable commonality: Items assessing memory loss (i.e., DSM-IV symptom C3) consistently account for the lowest proportions of factor variance (ranging from 3% to 14% in this study's samples). This finding has been noted by others (e.g., King et al., 1998) and could, as King and colleagues suggest, reflect difficulties in assessing memory loss for events one cannot remember or the existence of a fifth factor relating to memory. Indeed, loss of memory during traumatic events may not always be psychogenic and a reflection of avoidance, but could represent amnesia due to head injury or use of drugs or alcohol during the event that interfere with memory production. Also relevant to this issue, McWilliams et al. (2005) conducted a secondary analysis of their symptom data that revealed a stable factor reflecting difficulties thinking about and remembering trauma. Thus, further research on the nature of PTSD might fruitfully focus on examining these alternative explanations.

There are additional implications of these findings for the assessment of PTSD symptoms. First, these findings support the idea that the interview measure of symptoms used in this study, the CAPS, is a ''gold standard'' of PTSD assessment (Weiss, 2004). Indeed, strong support for a four-factor model was found across all samples, despite variations in trauma type, time elapsed since trauma, and assessment timeframe. Second, self-report data may be less valid in its assessment of PTSD symptoms, and may differ in construct validity across trauma samples. This is best illustrated by the PSS-SR results. Data from this measure fit the four-factor model well in a sample of recent assault survivors, but fit poorly in a sample of treatment-seekers who had experienced assault an average of nine years previously. Consequently, when choosing a self-report measure of PTSD symptoms, it may be prudent to consider only those measures with strong psychometric properties in samples that very closely resemble the characteristics of patients attending one's clinic or the sample of a proposed study.

While the findings of this research and its implications are provocative, they must be considered in light of some limitations. First, the four-factor model examined in this study is only one of several that have received empirical support in CFAs. While all the empirically supported four-factor models are similar, examining the fit of the data to a different model may have yielded somewhat different results and conclusions. It may be quite informative to examine the fit of self-report and interview measures across several different models. Nevertheless, the focus of this paper was to examine the fit of self-report versus interview measures in a single empirically supported model, rather than to identify a best-fitting model for this study's data. Examination of assessment strategies in a range of models warrants a second manuscript. Additionally, CFAs of self-reported PTSD symptoms have overwhelmingly used the PTSD Checklist; to our knowledge, only two CFA studies have used the PSS-

SR or the PDS (i.e., Andrews et al., 2006; Baschnagel et al., 2005). Thus, the possibility exists that the apparent weaker validity of PTSD self-report measures is limited to those examined in this study. It is notable, however, that both Andrews et al. (2006), using the PSS-SR, and Baschnagel et al. (2005), using the PDS, found four factor models to provide the best fit to their data. These studies counter the idea that the potentially weaker validity of PTSD self-report measures is largely due to the self-report measures examined. A third issue relates to participant diversity. While this study's samples were diverse in terms of such variables as time elapsed since trauma and race, there was no diversity in terms of participant gender. Thus, the generalization of these findings to men is an unanswered empirical question. It is also notable that PTSD symptoms in the recent assault sample were assessed within one month post-trauma, at a time when PTSD is not diagnosable by DSM criteria and that some participants in the domestic violence sample may be considered peri-traumatic. Finally, due to sample sizes, this study was not able to include method factors in the CFAs. Additional CFA studies that include a method factor are needed to directly address whether method variance contributes to the variability of factor analytic findings.

In summary, our findings provide empirical evidence that method idiosyncrasies may contribute to some of the inconsistency in previous factor analyses of PTSD symptoms. Moreover, interview assessment appears to more consistently assess symptoms across samples compared to self-report assessment. There was, however, one commonality: Both interview and self-report items assessing memory loss accounted for relatively small proportions of factor variance. Overall, these findings underscore the importance of method idiosyncrasies as a factor in the accurate assessment of PTSD, and suggest a need for better understanding of memory loss as a symptom of PTSD.

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